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Yamasaki, Shigehisa

Aquaculture Department, Southeast Asian Fisheries Development Center

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Culture experiments on the copepod, *Tisbintra elongata* MORI, and evaluation of that species as food organism for milkfish larvae

Shigehisa Yamasaki* and Jose Canto, Jr.

Five types of food were used to culture *Tisbintra elongata*: rice bran, cow dung, bread yeast, fermented fish solubles and *Spirulina* sp., *T. elongata* were cultured by two methods; one in 200 mL beakers and another in 30 L plastic pails. The rate of feeding at approximately 0.01 mg dry weight per individual for copepodite and adult stage (Itoh, 1973) were used. The initial starting density was 0.4 to 0.6 ind/mL. After 16 days period, the effect of the five kinds of food were evaluated. Results show that bread yeast gave the highest density followed by rice bran, *Spirulina*, cow dung and fermented fish solubles.

Determination of the optimum feeding amounts for rice bran and fermented fish solubles was carried out in 30 L pails. Three different rates of feeding with these two types of food were used. Results (Fig. 1) show that the population density of *T. elongata* was highest when fed with 0.125 x 5 mg/ind per day or rice bran and 0.27 mg/ind/day of fermented fish solubles.

The effectivity of rice bran and fermented fish soluble for the outdoor mass culture of *T. elongata* was evaluated. For rice bran, two 1-ton tanks were used while two 350 L tanks were used for fermented fish solubles. After blooming of *Chaetoceros* sp. had occurred in two 350 L tanks supplied with fermented fish solubles, copepods were inoculated at 0.05 ind/mL. Shelter in form of nipa leaves was provided in one tank. A feeding rate of 0.27 mg/ind/day rice bran was used in both tanks. Simultaneously in another two 1-ton tanks copepods of the same density were inoculated, one tank was provided with "nipa leaves" as shelter. The feeding rate of 0.4 mg/ind per day was used. A remarkable increase in the population density of copepods fed with fish soluble was observed during the first half of the culture period which lasted for 12 days. The highest density obtained was higher in the tank provided with shelter than that without shelter. The densities obtained were 10.0 and 8.0 ind/mL respectively. However, in the latter half of the culture period, the density declined rapidly in both tanks. *T. elongata* fed with rice bran increased rapidly to 9.5 ind per mL/day in all tanks provided with shelter; but in the tank without shelter, there was no observed increased in density. Instead, the density decreased after reaching the peak of 1.9 ind/mL.

* Laboratory of Aquaculture Physiology, Faculty of Fisheries, Kagoshima University, Japan.

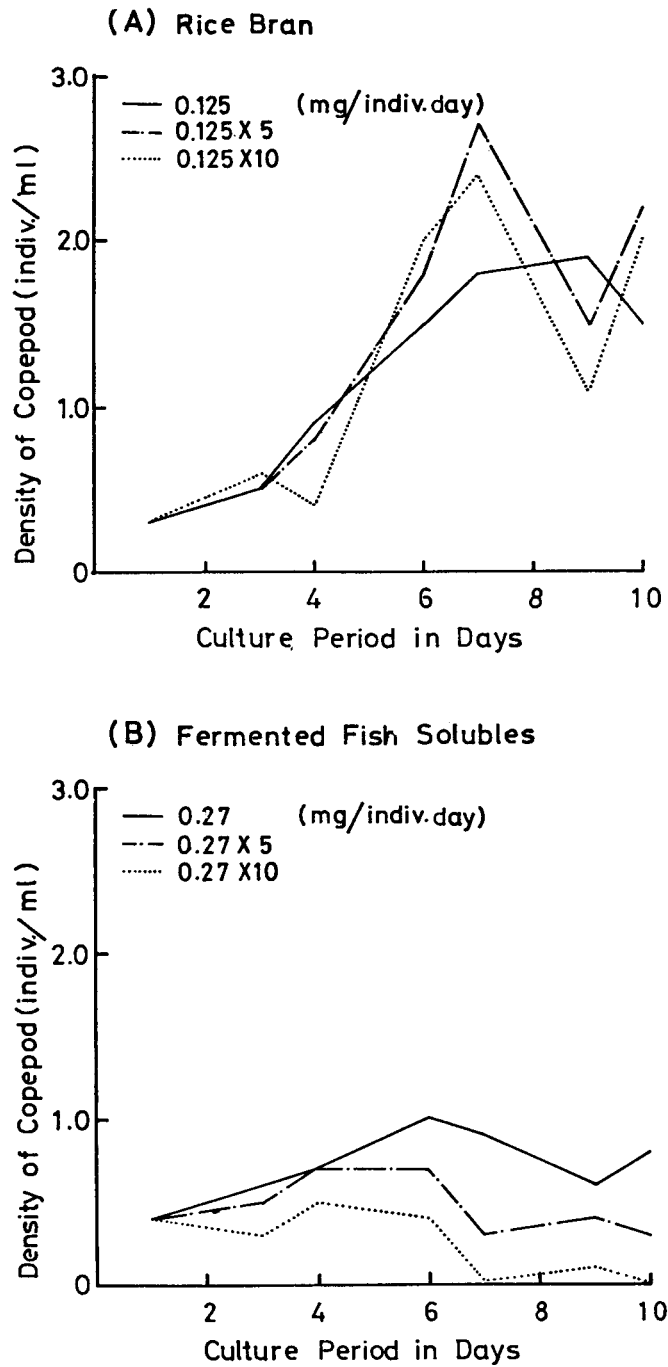


Fig. 1. Population growth of *Tisbintra* feeding on different amounts of rice bran and fermented fish solubles.

The salinity tolerance of *T. elongata* was also investigated. Results indicate that *T. elongata* could tolerate salinities as low as 13 ppt and as high as 67 ppt when transferred immediately from their natural habitat to the experimental condition. However, those cultured in the tanks could tolerate salinities only as low as 31 ppt or 44 ppt. A comparative study on the growth and survival rate of milkfish fry fed with the copepod *T. elongata* and brine shrimp, *Artemia salina* was also evaluated. Milkfish fry with body length ranging from 12.3mm to 13.5 mm with a mean weight of 7.6 mg were used for this study. Feeding of the fry were made twice daily at the rate of 4, 20 and 40 times the larval saturation. There were two replicates for each treatment and the feeding experiment lasted for 2 weeks. Results (Fig. 2, 3) indicate that there are no significant differences in the growth and survival of milkfish fry fed with *Artemia* or with the copepod *T. elongata*.

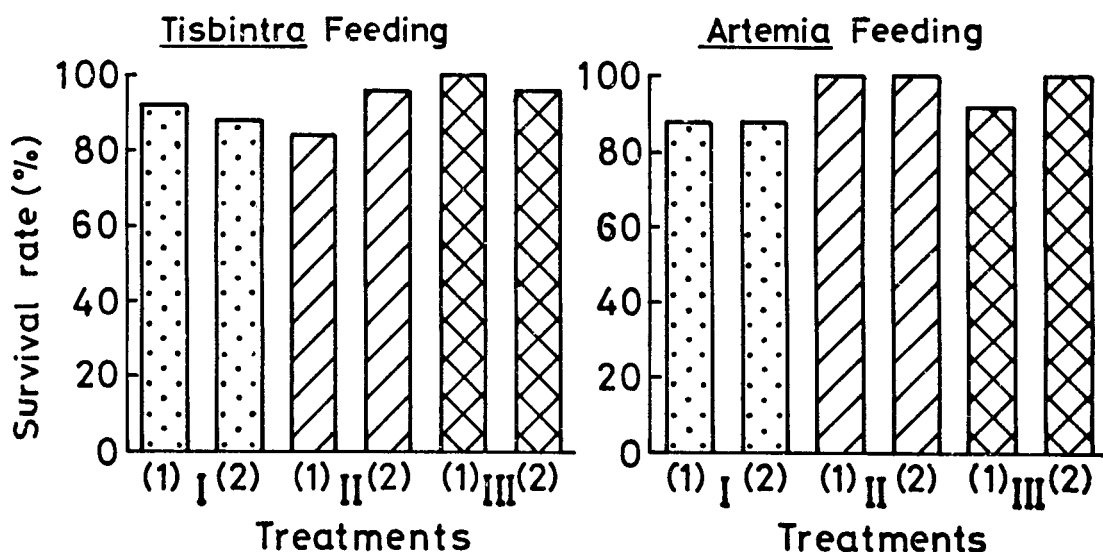


Fig. 2. Survival rate of milkfish larvae fed on *Tisbintra* and *Artemia* in 10 L aquaria.

- I : Treatment at low feeding rate
- II : Treatment at medium feeding rate
- III : Treatment at high feeding rate

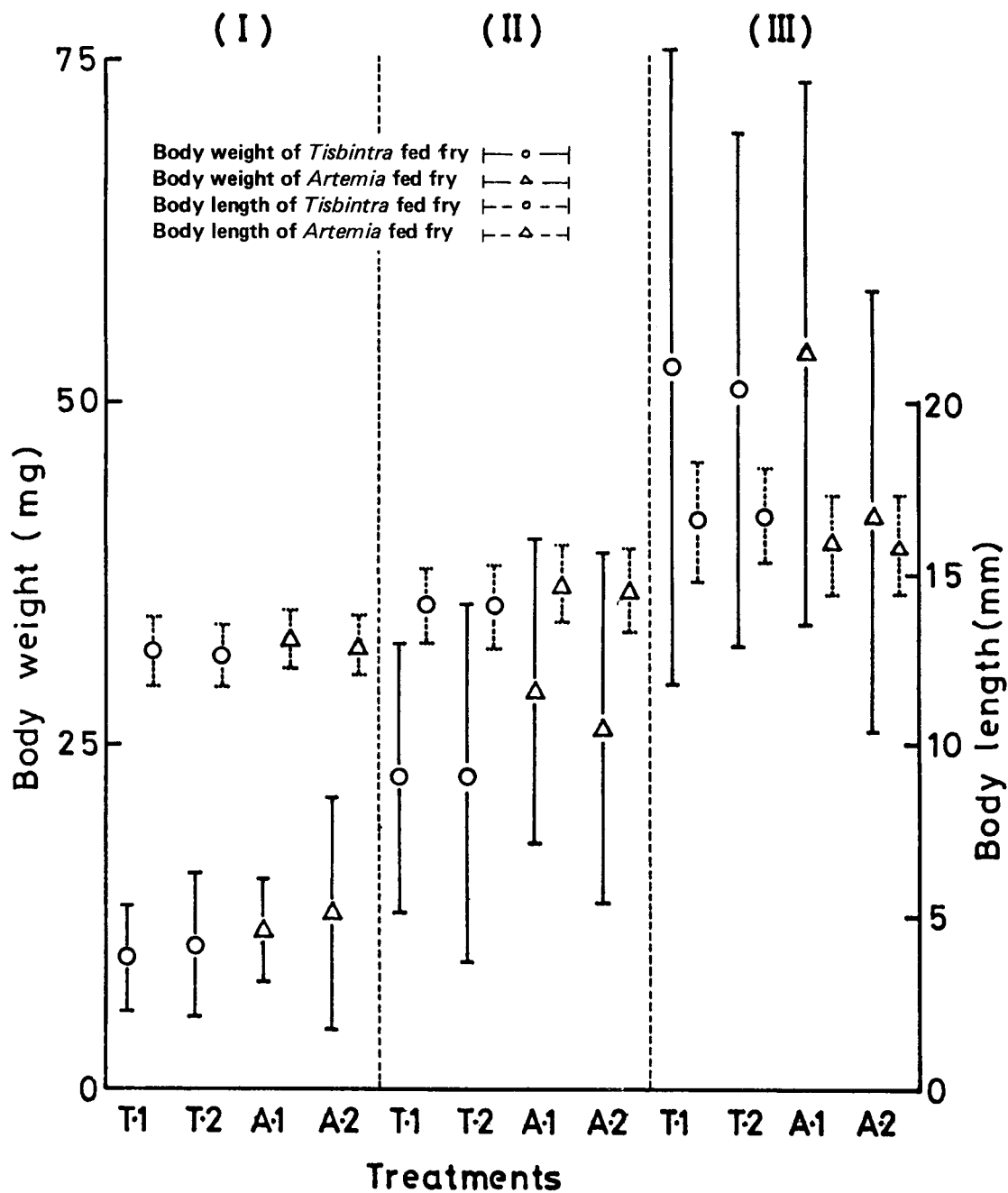


Fig. 3. Mean body weight and length of milkfish fry in each treatment.

Literature Cited

Itoh, K. (1973): Food experiments for copepods estimated from their metabolic rates. Bull. Plankton Soc. Japan, 20, 78-83.